

A. CLASSIFICATION OF SUBJECT MATTER

IPC 7 A61F13/56 B29C65/08 B23K20/10

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 7 A61F B29C B23K

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 531 666 A (UNI CHARM CORP) 17 March 1993 (1993-03-17) column 7, line 27-52; figures 7A,7B ---	1,3,4, 8-10, 14-19, 21-24
X	US 6 309 487 B1 (THARPE JOHN M ET AL) 30 October 2001 (2001-10-30) figure 6A ---	1,21
X	US 5 545 275 A (THARPE JOHN M ET AL) 13 August 1996 (1996-08-13) column 5, line 4-63; figure 6A ---	1,21
X	US 5 788 797 A (THARPE JOHN M ET AL) 4 August 1998 (1998-08-04) figure 6A --- -/--	1,21

☒ Further documents are listed in the continuation of box C.☒ Patent family members are listed in annex.

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- *G* document member of the same patent family

Date of the actual completion of the international search

27 January 2004

Date of mailing of the international search report

03/02/2004

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C.(Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
A	US 4 823 783 A (WILLHITE JR WILLIAM ET AL) 25 April 1989 (1989-04-25) figure 3 ---	1-26
A	WO 01 70159 A (SCA HYGIENE PROD AB) 27 September 2001 (2001-09-27) figures 10,13-15 -----	1-26

Patent document cited in search report		Publication date	Patent family member(s)	Publication date
EP 0531666	A	17-03-1993	JP 3112710 B2	27-11-2000
			JP 5015551 A	26-01-1993
			DE 59209616 D1	25-02-1999
			EP 0531666 A1	17-03-1993
			GB 2257652 A , B	20-01-1993
US 6309487	B1	30-10-2001	US 5308345 A	03-05-1994
			US 2003000620 A1	02-01-2003
			US 5545275 A	13-08-1996
			US 5788797 A	04-08-1998
US 5545275	A	13-08-1996	US 5308345 A	03-05-1994
			US 5788797 A	04-08-1998
			US 2003000620 A1	02-01-2003
			US 6309487 B1	30-10-2001
US 5788797	A	04-08-1998	US 5545275 A	13-08-1996
			US 5308345 A	03-05-1994
			US 2003000620 A1	02-01-2003
			US 6309487 B1	30-10-2001
US 4823783	A	25-04-1989	US 5059277 A	22-10-1991
			CA 1306932 C	01-09-1992
			CA 1313923 C2	02-03-1993
			DE 3763138 D1	19-07-1990
			EP 0234658 A1	02-09-1987
			JP 2730575 B2	25-03-1998
			JP 62270320 A	24-11-1987
WO 0170159	A	27-09-2001	SE 521872 C2	16-12-2003
			AU 4132701 A	03-10-2001
			EP 1267787 A1	02-01-2003
			JP 2003527203 T	16-09-2003
			SE 0000937 A	22-09-2001
			WO 0170159 A1	27-09-2001
			US 2003064652 A1	03-04-2003
			US 2001036786 A1	01-11-2001